

# Update on ISST Activities

Western Region MIC/HIC Workshop

12 May 2004

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WFO Seattle-Tacoma



# IFPS Science Steering Team

- Brad Colman (WR) – Lead
- Kevin Schrab (OST) – Facilitator
- Mark Jackson (WR)
- Dan Baumgardt (CR)
- Andy Patrick (SR)\*
- Steve Keighton (ER)
- Eric Stevens (AR)
- Bill Ward (PR)
- Pete Manousos (HPC)

\*Leaving (promotion to MIC)



# Current ISST Activities

- DGEX assessment summary and follow through to operational deployment
- Follow up with other requested model data on SBN
- Impacts on the digital forecast process
- Interaction w/ DSPO Action Teams
- Analysis of Record summit meeting
- Responding to short term requests



# DGEX (Downscaled GFS with Eta eXtension)

- Brings forecasters some immediate relief in generating medium-range grids
- Produces objective, physically-consistent downscaled model guidance through 192 hours (days 4 to 8)
- Distributed grid set focuses on optimal downscaling to NDFD-matching resolution
- Baseline SmartInit scripts designed to mitigate ISC issues

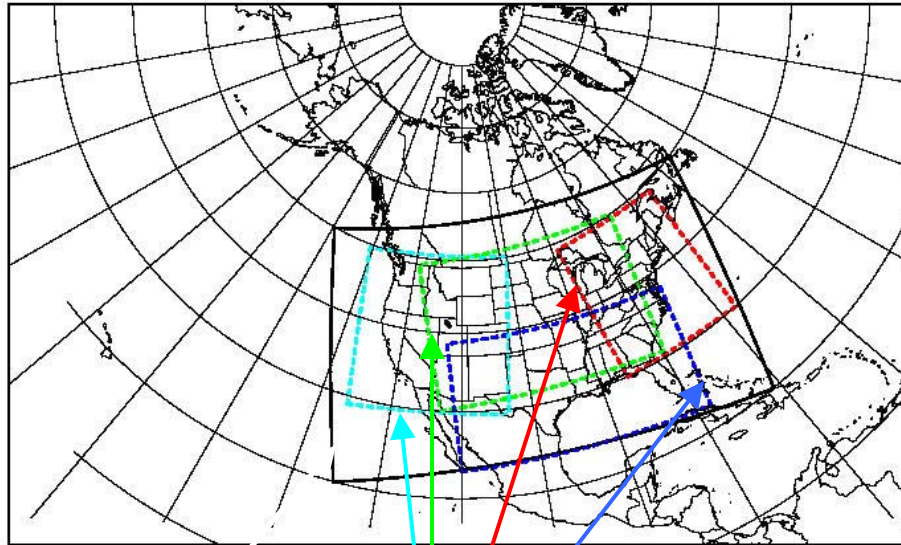


# Brief DGEX description

- 12-km Eta used as downscaling model (WRF in future)
- GFS LBCs; 78-174 hr uses 3-hr LBCs; 174-192 hr uses 6-hr LBCs
- Start DGEX at 78 hr for adjustment (84 hr first time available)
- Provides 12-km data every 6 hours to 192 hours
- Operational cycle times – run twice per day per grid
  - 06Z and 18Z (00Z and 12Z GFS LBCs) for CONUS
    - Available ~10Z (06Z run) and ~22Z (18Z run)
  - 12Z and 00Z (06Z and 18Z GFS LBCs) for OCONUS
  - Accommodates 18Z, day 8 grids timeliness deadline



# DGEX – Domains

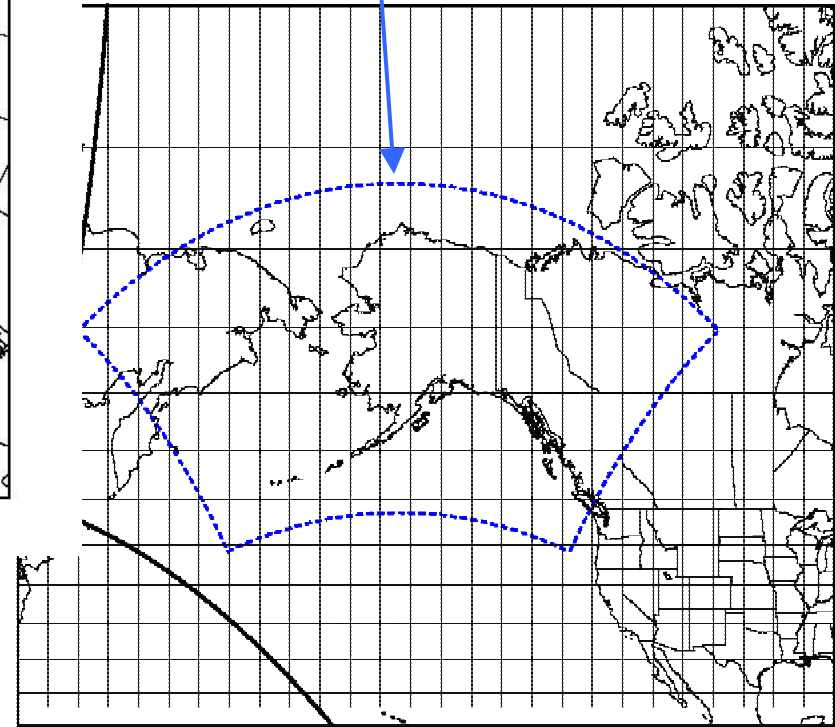


Dashed = Eta output grids for 8-day extension

*CONUS Domain*

*Regional Distribution Tiles*

*Alaska Region Domain*



Regional subsets only used during evaluation period (Regional WAN distribution).  
Final distribution will be on grid #185 with GRIB2 compression via new AWIPS SBN.

# DGEX Scientific Assessment

- EMC objective verification
- HPC subjective forecaster feedback
- Field Evaluation: March 15 – April 20, 2004
  - 10 WFOs participated
    - WR offices (Spokane, Boise, and Pendleton)
  - Survey form provided subjective feedback



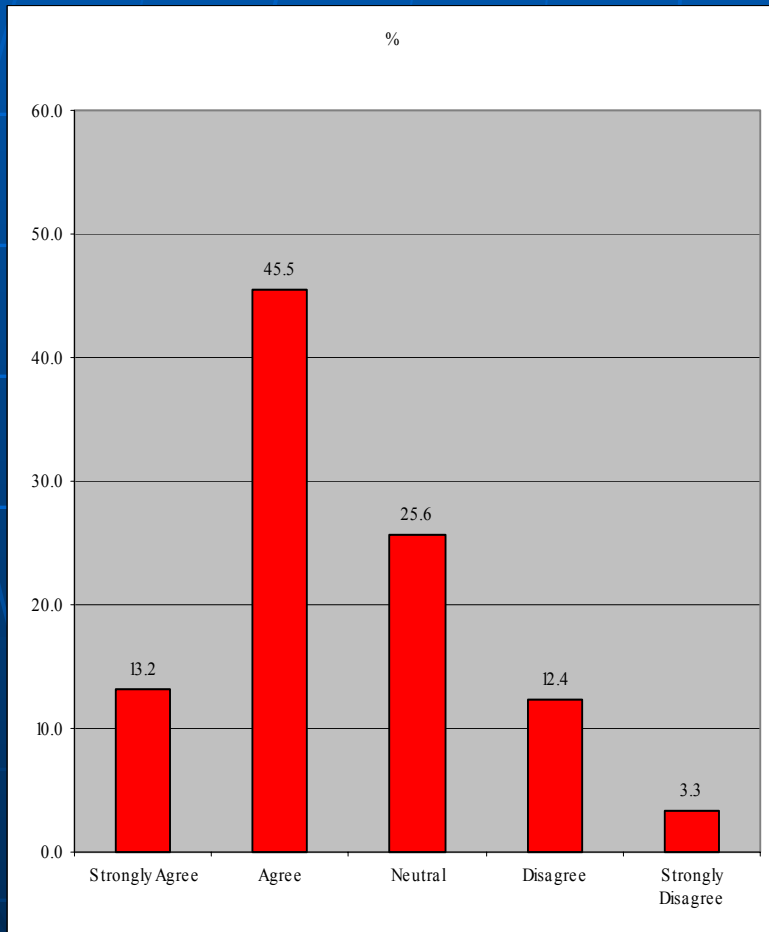
# Subjective Field Assessment

- Majority of forecasters found DGEX useful
  - Many positive comments on realism and value of externally forced mesoscale detail
  - Wind grids were used most often and deemed to be of the best quality, Max/Min T also used frequently
  - Favorable assessment -- even with a few drawbacks (timeliness, data outages, limited availability)





Key Survey Question (#9): “Overall, the DGEX provided useful value over the latest 00Z GFS run, including (where applicable) providing improved detail of terrain, and/or shoreline/coastline effects.”

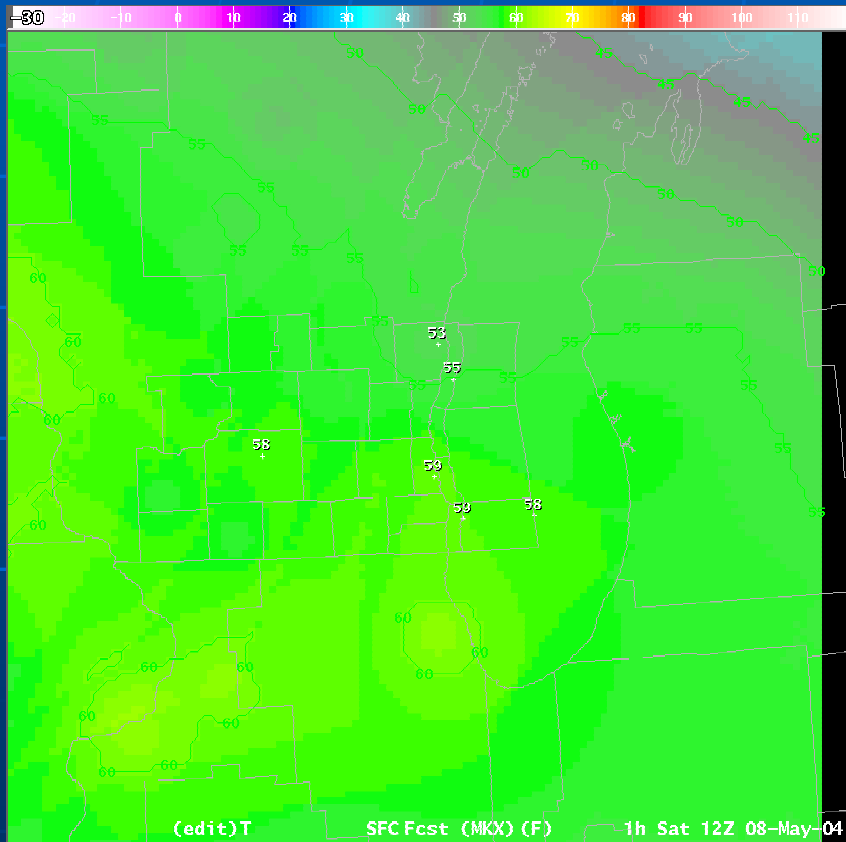


- Only ~15% disagreed
- Nearly 60% found DGEX useful

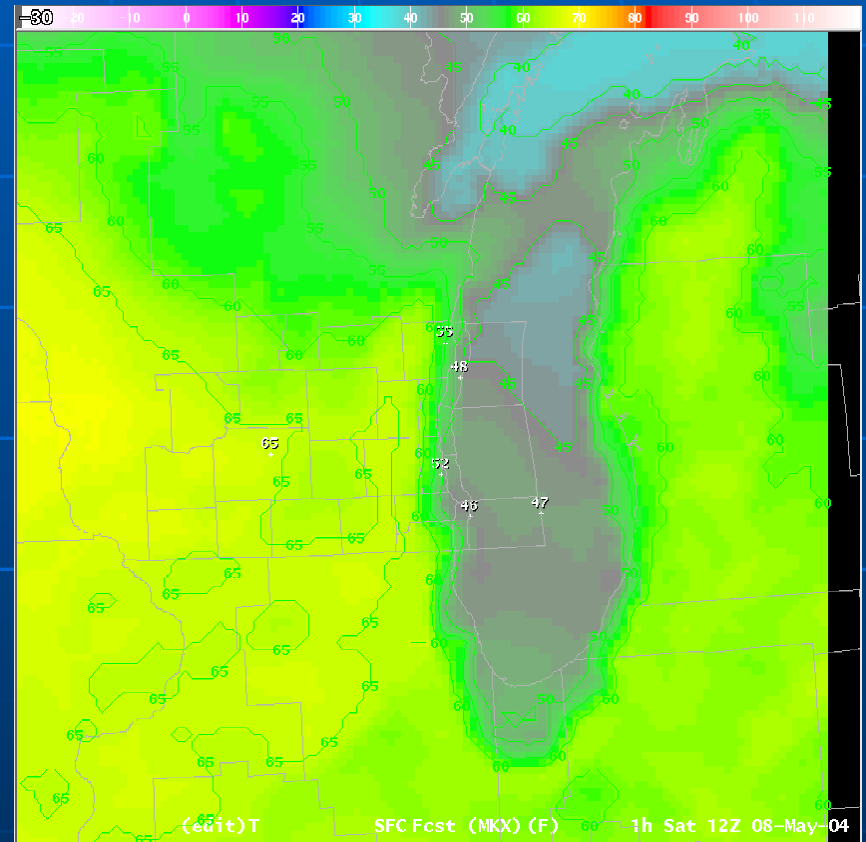


# DGEX example away from terrain...

## Day 6 Forecasts



ADJMRf: COOP and MRF MOS



Raw DGEX Surface T



# DGEX Assessment Summary

## Special considerations

- Occasional, significant differences occur between DGEX and GFS
  - Still, EMC objective verification shows DGEX and forcing GFS of equal skill
  - Requires training and increased forecaster experience to build confidence
- Run-to-run variability impacts usefulness of DGEX (model flip-flop)
  - Underscores current imbalance between forecast resolution and forecast uncertainty (argument to apply ensemble guidance on DGEX background field?; other ways to include uncertainty?)
  - A synoptic-scale GFS issue, not a DGEX issue
- Forecaster workload did not show an overall decrease
  - Expected for any new model, especially given impact of assessment activities
  - Should be reduced when all WFOs have DGEX, and when consistent methodologies for populating grids are developed



# Operational DGEX

- Still planned for OB3.2 (June)
- GFE SmartInits will be updated (Tim Barker WFO MSO)
- Can also be used as background field to apply MatchMOS (see Dave Novak's (ER) page)

<http://www.werh.noaa.gov/SSD/smarttools/newdata/newdata.htm>

- Details (e.g., available fields) on ISST page

[http://www.nws.noaa.gov/ost/ifps\\_sst/](http://www.nws.noaa.gov/ost/ifps_sst/)



# A National Weather Service Success Story

- ISST and EMC (Geoff Dimego) early partners
- OS&T and NCEP management recognized importance
- Regions supported effort
- EMC, NCO, TOC, and others critical
- A few key individuals:
  - Eric Rogers (EMC), Kirby Cook (WR/SSD), Tim Barker (WFO Boise), and Jay Smith (WFO Fairbanks)



# Other New Model Data

- Eta12 Sfc fields thru 84 hrs (since Feb)
- “Full” Eta12, thru 84hrs, 4x/day (OB3.2)
- More GFS levels, thru 240hrs, 4x/day (OB3.2)
- “Full” set of GFS fields on grid 211, thru 240hrs, 4x/day (OB4)
- For details on these RCs, see ISST page



# Review of Digital Forecast Process

- “Brainstormed” factors impacting this process
- Currently soliciting input from forecasters (Forums, Regional meetings and conference calls)
- Will develop recommendations for current and future forecast methodologies and system design, based on consensus from field
- Likely outcome: An ISST position paper and continuous interactions with DSPO and Action Teams



# Forums on Factors Impacting DFP

<http://www.nwstc.noaa.gov/cgi/dcforum/dcboard.cgi>

## ■ Forum #1: Impacts on Forecast Desk

- Forecast quality – how to verify?
- How to minimize manual grid manipulations and maximize science tools?
- How to increase focus on shorter range and improve situational awareness?

## ■ Forum #2: Distributions of Duties in DFP

- What are the optimal roles of NCEP centers and WFOs? (e.g., how to take advantage of HPC expertise in medium range)
- How do we determine the correct role of the human forecaster?

Lots of great discussion and background information from AMS  
“Future Role of Humans in the Forecast Process” Forum in Seattle  
<http://www.ametsoc.org/boardpges/bogm/forecasterforum.html>





# DFP Forums (continued)

## ■ Forum #3: Characteristics of the DFP

- How to include confidence/uncertainty information?
- What are the optimal spatial and temporal resolutions? (scientific validity vs. customer needs, separate local and national databases?, changing resolution with forecast interval?, etc.)
- How to communicate differences between area-average characteristics of a grid vs. point forecasts?

## ■ Forum #4: Customer needs

- Access to DFP, how to present it?
- How do we collaborate with partners/customers?
- Forecast update frequency (routine and event-driven)



# Soliciting Field Input on the DFP

- Discussion Forums
- ER SOO/DOH Meeting breakout sessions
- Lead Forecaster Conference Calls; SOO calls
- Future AMS workshops on role of humans in forecast process
- Considering initiatives/ideas from DSPO Teams, Regions, other groups



# Liaison/Advisory Role on DSPO Action Teams

- Operations: Eric Stevens
- Assessment: Mark Jackson, Bill Ward
- Systems and Comms: Bill Ward
- Training and Outreach: Steve Keighton, Andy Patrick
- Program Planning: Brad Colman



# Analysis of Record

- ISST has identified this as our number one priority
- Goal: Determine operational requirements, science and R&D issues that need to be addressed, potential roadblocks, and strategy for implementation. Need to get this on a fast track!
- John Horel will update current approach



# Role of ISST in DSPO Era?

- Has been confusing; continually talking with Jack Hayes, Leroy Spayd, Regions
- Trying to provide input, as needed, directly to the Action Teams
- Also providing input, as requested by other entities (Regions, Tech Steering Team, MDL, etc)
- Stay true to our charter: Identify and make recommendations on key IFPS science issues.

